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EXAMINER	
SAVAGE, MATTHEW O	

ART UNIT	PAPER NUMBER
1724	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/942,304	DE SYLVA, ROBERT	
	Examiner	Art Unit	
	Matthew O Savage	1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 June 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) *3,5,6 and 16-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,7-15,21 and 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 June 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

The disclosure is objected to because of the following informalities:

On line 4 of the eighth paragraph of the amendment to page 27 of the specification, it is suggested that one occurrence of "second means" be deleted.

Appropriate correction is required.

The amendment filed on 6-15-04 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

Concerning the fourth full paragraph of the amendment to page 27 of the specification, the concept of the holes 78 forming the "means for squirting" is considered new matter;

Regarding the seventh full paragraph of the amendment to page 27 of the specification, the concept cavitation jets forming the "means for expanding" is considered new matter;

As to the eighth full paragraph of the amendment to page 27 of the specification, the concept of the holes 78 forming the "second means for facilitating " is considered new matter.

Applicant is required to cancel the new matter in the reply to this Office Action.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact

> terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 10, 13, and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Concerning claims 10, 13, and 15, the specification fails to adequately disclose how to form the recited electromagnet. In particular, no pole piece or magnet induction member for collecting and concentrating the lines of magnetic force in order to enable collection of metallic particles has been disclosed in the specification.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2, 4, 7-11, 13, and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to the preamble and line 6 of claim 1, it is unclear as to whether "fluid" or "oil" is being claimed.

Concerning claims 10, 13, and 15, it is unclear as to how a coil alone can function to attract metallic particles since no pole piece or magnet induction member for

collecting and concentrating the lines of magnetic force in order to enable collection of metallic particles has been recited in the claim or disclosed in the specification.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 8, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowry in view of Fawcett et al and Christensen et al.

With respect to claim 1, Lowry discloses first means disclosed to be an inlet orifice 26, a filter 54, holes 58, and the vent 62 (see the first paragraph of the amendment to page 27 of the specification filed on 6-15-04) for changing the pressure of a fluid from a first pressure to a second pressure, the second pressure being less than the first pressure, second means 60 for distributing fluid within an evaporation chamber at the second pressure. The limitation "second means" does not invoke the constraints of 35 U.S.C. 112, sixth paragraph since the means is further substantially described as including capillary channels. Lowry fails to specify the evaporation chamber including an evaporation surface having channels for dispersing fluid about the surface to facilitate evaporation of contaminants from the fluid. Fawcett et al disclose the concept of providing channels 4 in an evaporation surface and teach that such

structures redistribute the film in such a way to break up surface layers of partially evaporated liquid and expose fresh outer surface layers of the film thereby increasing the evaporation efficiency of the surface (see lines 5-15 of col. 2). It would have been obvious to have modified the apparatus of Lowry so as to have included channels as suggested by Fawcett et al in order to increase the evaporation efficiency of the surface. Lowry and Fawcett et al fail to specify channels that are capillary channels for dispersing liquid via capillary action. Christensen et al discloses that it is known in the art to provide mass transfer surfaces with capillary channels and teaches that such channels enable horizontal operation of tubular evaporation surface and assists in the formation of a thin layer of liquid on the interior surface to the tube thereby increasing the evaporation efficiency of the apparatus (see from line 62 of col. 3 to line19 of col. 4). It would have been obvious to have modified the combination suggested by Lowry and Fawcett et al so has to have included capillary channels as suggested by Christensen et al in order to enable horizontal operation of a tubular mass transfer surface and to assist in the formation of a thin layer of liquid on the interior surface of the tube in order to further enhance the evaporation efficiency of the apparatus.

Concerning claim 2, Christensen et al discloses capillary channels that form the means for employing siphoning action (e.g., corresponding to the structure described in the third full paragraph of the amendment to page 27 of the specification) to disperse fluid about the evaporation surface when the system is installed at an angle so the evaporation surface is angled (see from line 62 of col. 3 to line 4 of col. 4).

As to claim 8, Lowry discloses means capable of squirting 58 (e.g., corresponding to the structure of the holes 78 disclosed in the fourth full paragraph of the amendment to page 27 of the specification). In addition, Fawcett et al also disclose means 5 capable of squirting.

With respect to claim 12, Lowry discloses first means disclosed to be an inlet orifice 26, a filter 54, holes 58, and the vent 62 (see the first paragraph of the amendment to page 27 of the specification filed on 6-15-04) capable of changing the pressure of the fluid from a first pressure to a second pressure, the second pressure being lower than the first pressure and being capable of causing cavitation of contaminants in the fluid since volatiles / contaminants within the oil are disclosed to vaporize from the thin film, and second means 56 in the form of a coarse surface for distributing the fluid within an evaporation chamber 14 at the second pressure to facilitate evaporation of contaminants within the fluid. Lowry fails to specify second means in form of capillary channels as described in the second full paragraph to page 27 of the specification filed on 6-15-04). Fawcett et al disclose the concept of providing channels 4 in an evaporation surface and teach that such structures redistribute the film in such a way to break up surface layers of partially evaporated liquid and expose fresh outer surface layers of the film thereby increasing the evaporation efficiency of the surface (see lines 5-15 of col. 2). It would have been obvious to have modified the apparatus of Lowry so as to have included channels as suggested by Fawcett et al in order to increase the evaporation efficiency of the surface. Lowry and Fawcett et al fail to specify channels that are capillary channels for dispersing liquid via capillary action.

Christensen et al discloses that it is known in the art to provide mass transfer surfaces with capillary channels and teaches that such channels enable horizontal operation of tubular evaporation surface and assists in the formation of a thin layer of liquid on the interior surface to the tube thereby increasing the evaporation efficiency of the apparatus (see from line 62 of col. 3 to line19 of col. 4). It would have been obvious to have modified the combination suggested by Lowry and Fawcett et al so has to have included capillary channels as suggested by Christensen et al in order to enable horizontal operation of a tubular mass transfer surface and to assist in the formation of a thin layer of liquid on the interior surface of the tube in order to further enhance the evaporation efficiency of the apparatus.

Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowry in view of Fawcett et al and Christensen et al as applied to claim 1 above, and further in view of Priest.

With respect to claim 4, Christensen et al disclose spiral capillary channels. Lowry, Fawcett et al, and Christensen et al fail to specify a vent for venting contaminants through a ceiling of the evaporation chamber. Priest discloses the concept of providing a vent 150 for centing contaminants through a ceiling of an evaporation chamber suggests that such an arrangement facilitates connection of the apparatus to an intake manifold of an engine with a line 21 (see lines 65-66 of col. 5). It would have been obvious to have modified the combination suggested by Lowry, Fawcett et al, and Christensen et al so as to have included a vent in the ceiling of the evaporation

chamber as suggested by Priest in order to facilitate connection of the apparatus to the manifold of an internal combustion engine with a line 21.

With respect to claim 7, Christensen et al disclose capillary channels that are partially circular sufficiently deep to distribute oil about a circumference of the evaporation chamber when the fluid cleaning system and evaporation chamber are in a near horizontal position.

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowry in view of Fawcett et al and Christensen et al as applied to claim 9 above, and further in view of Arntz.

With respect to claims 9 and 10, Lowry and Fawcett et al fail to means for causing contamination in the form of jets including funnel portions for accelerating the fluid corresponding to the structure described in the fourth full paragraph of the amendment to page 27 of the specification. Arntz discloses an analgous apparatus including jets with funnel portions 60 and suggests that such an arrangement facilitates removal of volitiles from the fluid. It would have been obvious to have modified the combination suggested by Lowry, Fawcett et al and Christensen et al so as to have included jets as suggested by Arntz in order to facilitate removal of volitiles from the fluid.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lowry in view of Fawcett et al and Christensen et al as applied to claim 1 above, and further in view of Liaw.

With respect to claim 11, Lowry, Fawcett et al, and Christensen et al fail to specify an electromagnetic coil about the evaporation chamber. Liaw discloses an oil filter including an electromagnetic coil 20 disposed about an analogous chamber (see FIG. 3), the coil capable of functioning as a heater and an electromagnet, the filter including additional channels 32 capable of maintaining metallic contaminants therein when the coil is not powered, and suggests that such an arrangement enables fine ferromagnetic particles to be removed from the fluid. It would have been obvious to have modified the combination suggested by Lowry, Fawcett et al, and Christensen et al so as to have included the electromagnetic coil as suggested by Liaw in order to enable the removal of fine ferromagnetic particles from the fluid.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lowry in view of Fawcett et al, and Christensen et al as applied to claim 12 above, and further in view Liaw,.

With respect to claim 13, Lowry fails to specify the evapororation surface as being surrounded by an electromagnetic coil. Liaw discloses an oil filter including an electromagnetic coil 20 disposed surrounding an analogous surface (see FIG. 3), and suggests that such an arrangement enables fine ferromagnetic particles to be removed from the fluid. It would have been obvious to have modified the combination suggested

by Lowry so as to have included the electromagnetic coil as suggested by Liaw in order to enable the removal of fine ferromagnetic particles from the fluid. Lowry and Liaw fail to specify spiral capillary channels. Fawcett et al disclose the concept of providing channels 4 in an evaporation surface and teach that such structures redistribute the film in such a way to break up surface layers of partially evaporated liquid and expose fresh outer surface layers of the film thereby increasing the evaporation efficiency of the surface (see lines 5-15 of col. 2). It would have been obvious to have modified the combination suggested by Lowry and Liaw so as to have included channels as suggested by Fawcett et al in order to increase the evaporation efficiency of the surface. Lowry, Liaw, and Fawcett et al fail to specify channels that are spiral capillary channels for dispersing liquid via capillary action. Christensen et al discloses that it is known in the art to provide mass transfer surfaces with spiral capillary channels and teaches that such channels enable horizontal operation of tubular evaporation surface and assists in the formation of a thin layer of liquid on the interior surface to the tube thereby increasing the evaporation efficiency of the apparatus (see from line 62 of col. 3 to line 35 of col. 4). It would have been obvious to have modified the combination suggested by Lowry, Liaw, and Fawcett et al so has to have included spiral capillary channels as suggested by Christensen et al in order to enable horizontal operation of a tubular mass transfer surface and to assist in the formation of a thin layer of liquid on the interior surface of the tube in order to further enhance the evaporation efficiency of the apparatus.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lowry in view of Miller, Fawcett et al, and Christensen et al.

With respect to claim 14, Lowry discloses an evaporation surface including perforations 58. Lowry fails to specify the recited surface contour. Miller discloses a surface contour in the form of corrugations 24 for expanding the surface area of an evaporation chamber over that of a substantially flat surface in an analogous apparatus and suggests that such a modification increases the evaporation efficiency of the apparatus. It would have been obvious to have modified the apparatus of Lowry so as to have included the means in the form of corrugations in order to expand the evaporative surface area of the apparatus thereby increasing the evaporation efficiency of the apparatus. Miller fails to specify expanding the surface area by at least 5% over that of a flat surface, however, such a modification would have been obvious in order to optimize the apparatus for a specific application. Lowry and Miller fail to specify channels for dispersing fluid about the surface. Fawcett et al disclose the concept of providing channels 4 in an evaporation surface and teach that such structures redistribute the film in such a way to break up surface layers of partially evaporated liquid and expose fresh outer surface layers of the film thereby increasing the evaporation efficiency of the surface (see lines 5-15 of col. 2). It would have been obvious to have modified the combination suggested by Lowry and Miller so as to have included channels as suggested by Fawcett et al in order to increase the evaporation efficiency of the surface. Lowry, Miller, and Fawcett et al fail to specify channels that are capillary channels for dispersing liquid via capillary action. Christensen et al discloses

that it is known in the art to provide mass transfer surfaces with capillary channels and teaches that such channels enable horizontal operation of tubular evaporation surface and assists in the formation of a thin layer of liquid on the interior surface to the tube thereby increasing the evaporation efficiency of the apparatus (see from line 62 of col. 3 to line19 of col. 4). It would have been obvious to have modified the combination suggested by Lowry, Miller, and Fawcett et al so has to have included capillary channels as suggested by Christensen et al in order to enable horizontal operation of a tubular mass transfer surface and to assist in the formation of a thin layer of liquid on the interior surface of the tube in order to further enhance the evaporation efficiency of the apparatus.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lowry in view of Fawcett et al, Christensen et al, Arntz, and Liaw.

With respect to claim 15, Lowry discloses first means 26, 54, 58 for changing the pressure of a fluid from a first pressure to a second pressure, the second pressure being less than the first pressure, second means 60 for distributing fluid within an evaporation chamber at the second pressure, a filter 54 for removing solid contaminants from the fluid and surrounding the evaporation chamber, and a space 12 between an oil inlet 22 and the filter. Lowry fails to specify the evaporation chamber including an evaporation surface having channels for dispersing fluid about the surface to facilitate evaporation of contaminants from the fluid. Fawcett et al disclose the concept of providing channels 4 in an evaporation surface and teach that such structures

redistribute the film in such a way to break up surface layers of partially evaporated liquid and expose fresh outer surface layers of the film thereby increasing the evaporation efficiency of the surface (see lines 5-15 of col. 2). It would have been obvious to have modified the apparatus of Lowry so as to have included channels as suggested by Fawcett et al in order to increase the evaporation efficiency of the surface. Lowry and Fawcett et al fail to specify channels that are spiral capillary channels for dispersing liquid via capillary action. Christensen et al discloses that it is known in the art to provide mass transfer surfaces with spiral capillary channels and teaches that such channels enable horizontal operation of tubular evaporation surface and assists in the formation of a thin layer of liquid on the interior surface to the tube thereby increasing the evaporation efficiency of the apparatus (see from line 62 of col. 3 to line 35 of col. 4). It would have been obvious to have modified the combination suggested by Lowry and Fawcett et al so has to have included spiral capillary channels as suggested by Christensen et al in order to enable horizontal operation of a tubular mass transfer surface and to assist in the formation of a thin layer of liquid on the interior surface of the tube in order to further enhance the evaporation efficiency of the apparatus. Lowry and Fawcett et al fail to specify cavitation jets. Arntz discloses an analgous apparatus jets 60 capable of causing cavititation since they are funnel shaped and suggests that such an arrangement facilitates removal of volitiles from the fluid. It would have been obvious to have modified the combination suggested by Lowry, Fawcett et al and Christensen et al so as to have included jets as suggested by Arntz in order to facilitate removal of volitiles from the fluid. Lowry, Fawcett et al, Christensen et

al, and Arntz fail to specify an electromagnetic coil. Liaw discloses an oil filter including an electromagnetic coil 20 disposed about an analogous chamber (see FIG. 3), the coil capable of functioning to heat the chamber and teaches that such an arrangement enables fine ferromagnetic particles to be removed from the fluid. It would have been obvious to have modified the combination suggested by Lowry, Fawcett et al, Christensen et al, and Arntz so as to have included the electromagnetic coil as suggested by Liaw in order to enable the removal of fine ferromagnetic particles from the fluid. It is noted that the limitation of the "first means" does not invoke the constraints of 35 U.S.C. 112, sixth paragraph since the limitations to the filter further structurally define the means. Likewise, the limitations to the "second means" does not invoke the constraints under 35 U.S.C. 112, sixth paragraph since the means has been further structurally defined to include spiral capillary channels and cavitation jets.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lowry in view of Miller.

With respect to claim 21, Lowry discloses a housing 40 having a filter 54 disposed therein, an inlet 22 opening to a first space in the housing between the inlet and filter to facilitate distribution of a fluid at a first pressure about input surfaces of the filter, an evaporation chamber 14 exposed to a second pressure lower than the first pressure, the evaporation chamber partially surrounded by an output surface of the filter, and an outlet 18 in communication with the evaporation chamber and positioned in a base 16 of the housing. Lowry fails to specify means for expanding an evaporative

surface area of the evaporation chamber over that of a substantially flat surface described to be the contour of the surfaces 238 shown in FIG. 10 and in the sixth paragraph of the amendment to page 27 of the specification. Miller discloses means in the form of corrugations 24 that expand the evaporative surface area of an evaporation chamber over that of a substantially flat surface in an analogous apparatus and suggests that such a modification increases the evaporation efficiency of the apparatus. It would have been obvious to have modified the apparatus of Lowry so as to have included the means in the form of corrugations in order to expand the evaporative surface area of the apparatus thereby increasing the evaporation efficiency of the apparatus.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2, 4-8, 12, and 21 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 6,368,497 in view of Fawcett et al and Christensen et al.

With respect to instant claim 1, claim 1 of '497 discloses all of the details with the exception of the capillary channels. Fawcett et al disclose the concept of providing channels 4 in an evaporation surface and teach that such structures redistribute the film in such a way to break up surface layers of partially evaporated liquid and expose fresh outer surface layers of the film thereby increasing the evaporation efficiency of the surface (see lines 5-15 of col. 2). It would have been obvious to have modified the apparatus of '497 so as to have included channels as suggested by Fawcett et al in order to increase the evaporation efficiency of the surface. '497 and Fawcett et al fail to specify channels that are capillary channels for dispersing liquid via capillary action. Christensen et al discloses that it is known in the art to provide mass transfer surfaces with capillary channels and teaches that such channels enable horizontal operation of tubular evaporation surface and assists in the formation of a thin layer of liquid on the interior surface to the tube thereby increasing the evaporation efficiency of the apparatus (see from line 62 of col. 3 to line19 of col. 4). It would have been obvious to have modified the combination suggested by '497 and Fawcett et al so has to have included capillary channels as suggested by Christensen et al in order to enable horizontal operation of a tubular mass transfer surface and to assist in the formation of a thin layer of liquid on the interior surface of the tube in order to further enhance the evaporation efficiency of the apparatus.

Concerning claim 2, Christensen et al discloses capillary channels that form the means for employing siphoning action to disperse fluid about the evaporation surface when the system is installed at an angle so the evaporation surface is angled (see from line 62 of col. 3 to line 4 of col. 4).

As to claim 4, Christensen et al disclose spiral capillary channels, and claims 2 and 3 of '497 recites a vent for venting the contaminants through a ceiling of the evaporation chamber.

With respect to claim 7, Christensen et al disclose capillary channels that are partially circular sufficiently deep to distribute oil about a circumference of the evaporation chamber when the fluid cleaning system and evaporation chamber are in a near horizontal position.

As to claim 8, '497 recites perforations capable of functioning as means capable of squirting 58. In addition, Fawcett et al also disclose means 5 capable of squirting.

With respect to claim 12, '497 discloses first means for changing the pressure of the fluid from a first pressure to a second pressure, and second means in the form of a ridged surface for distributing the fluid within an evaporation chamber at the second pressure to facilitate evaporation of contaminants within the fluid. '497 fails to specify second means in form of capillary channels as described in the second full paragraph to page 27 of the specification filed on 6-15-04). Fawcett et al disclose the concept of providing channels 4 in an evaporation surface and teach that such structures redistribute the film in such a way to break up surface layers of partially evaporated liquid and expose fresh outer surface layers of the film thereby increasing the

evaporation efficiency of the surface (see lines 5-15 of col. 2). It would have been obvious to have modified the '497 so as to have included channels as suggested by Fawcett et al in order to increase the evaporation efficiency of the surface. '497 and Fawcett et al fail to specify channels that are capillary channels for dispersing liquid via capillary action. Christensen et al discloses that it is known in the art to provide mass transfer surfaces with capillary channels and teaches that such channels enable horizontal operation of tubular evaporation surface and assists in the formation of a thin layer of liquid on the interior surface to the tube thereby increasing the evaporation efficiency of the apparatus (see from line 62 of col. 3 to line19 of col. 4). It would have been obvious to have modified the combination suggested by '497 and Fawcett et al so has to have included capillary channels as suggested by Christensen et al in order to enable horizontal operation of a tubular mass transfer surface and to assist in the formation of a thin layer of liquid on the interior surface of the tube in order to further enhance the evaporation efficiency of the apparatus.

With respect to claim 21, claim 3 of the patent recites a housing (e.g., container) having a filter therein (e.g., means for filtering), an inlet (e.g., the means for directing) into a first space in the housing between the inlet and filter to facilitate distribution of fluid at a first pressure about input surfaces of the filter (e.g., the first chamber and means for applying oil), an evaporation chamber (e.g., the inner chamber) exposed to a second pressure lower than the first pressure (e.g., via the means for communicating), the evaporation chamber being surrounded by an output surface of the filter (e.g., since the means for filtering defines the inner chamber), means for expanding an evaporative

surface area of the evaporation chamber over that of a substantially flat surface (e.g., the textured surface), and an outlet in communication with the evaporation chamber and positioned in a base of the housing (e.g., the means for draining), as recited in instant claim 21.

Claims 9 and 10 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 6,368,497 in view of Fawcett et al and Christensen et al as applied to claim 9 above, and further in view of Arntz.

With respect to claims 9 and 10, Lowry and Fawcett et al fail to means for causing contamination in the form of jets including funnel portions for accelerating the fluid corresponding to the structure described in the fourth full paragraph of the amendment to page 27 of the specification. Arntz discloses an analgous apparatus including jets with funnel portions 60 and suggests that such an arrangement facilitates removal of volitiles from the fluid. It would have been obvious to have modified the combination suggested by Lowry, Fawcett et al and Christensen et al so as to have included jets as suggested by Arntz in order to facilitate removal of volitiles from the fluid.

Claim 11 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 6,368,497 in

view of Fawcett et al and Christensen et al as applied to claim 1 above, and further in view of Liaw.

With respect to claim 11, '497, Fawcett et al, and Christensen et al fail to specify an electromagnetic coil about the evaporation chamber. Liaw discloses an oil filter including an electromagnetic coil 20 disposed about an analogous chamber (see FIG. 3), the coil capable of functioning as a heater and an electromagnet, the filter including additional channels 32 capable of maintaining metallic contaminants therein when the coil is not powered, and suggests that such an arrangement enables fine ferromagnetic particles to be removed from the fluid. It would have been obvious to have modified the combination suggested by '497, Fawcett et al, and Christensen et al so as to have included the electromagnetic coil as suggested by Liaw in order to enable the removal of fine ferromagnetic particles from the fluid.

Claim 13 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 6,368,497 in view of Liaw, Fawcett et al, and Christensen et al.

With respect to claim 13, '497 fails to specify the evapororation surface as being surrounded by an electromagnetic coil. Liaw discloses an oil filter including an electromagnetic coil 20 disposed surrounding an analogous surface (see FIG. 3), and suggests that such an arrangement enables fine ferromagnetic particles to be removed from the fluid. It would have been obvious to have modified the combination suggested by '497 so as to have included the electromagnetic coil as suggested by Liaw in order to

enable the removal of fine ferromagnetic particles from the fluid. '497 and Liaw fail to specify spiral capillary channels. Fawcett et al disclose the concept of providing channels 4 in an evaporation surface and teach that such structures redistribute the film in such a way to break up surface layers of partially evaporated liquid and expose fresh outer surface layers of the film thereby increasing the evaporation efficiency of the surface (see lines 5-15 of col. 2). It would have been obvious to have modified the combination suggested by '497 and Liaw so as to have included channels as suggested by Fawcett et al in order to increase the evaporation efficiency of the surface. '497, Liaw, and Fawcett et al fail to specify channels that are spiral capillary channels for dispersing liquid via capillary action. Christensen et al discloses that it is known in the art to provide mass transfer surfaces with spiral capillary channels and teaches that such channels enable horizontal operation of tubular evaporation surface and assists in the formation of a thin layer of liquid on the interior surface to the tube thereby increasing the evaporation efficiency of the apparatus (see from line 62 of col. 3 to line 35 of col. 4). It would have been obvious to have modified the combination suggested by '497, Liaw, and Fawcett et al so has to have included spiral capillary channels as suggested by Christensen et al in order to enable horizontal operation of a tubular mass transfer surface and to assist in the formation of a thin layer of liquid on the interior surface of the tube in order to further enhance the evaporation efficiency of the apparatus.

Claim 14 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 6,368,497 in view of Miller, Fawcett et al, and Christensen et al.

With respect to claim 14, claim 1 of '497 discloses an evaporation surface including perforations 58. '497 fails to specify the recited surface contour. Miller discloses a surface contour in the form of corrugations 24 for expanding the surface area of an evaporation chamber over that of a substantially flat surface in an analogous apparatus and suggests that such a modification increases the evaporation efficiency of the apparatus. It would have been obvious to have modified the apparatus of '497 so as to have included the means in the form of corrugations in order to expand the evaporative surface area of the apparatus thereby increasing the evaporation efficiency of the apparatus. Miller fails to specify expanding the surface area by at least 5% over that of a flat surface, however, such a modification would have been obvious in order to optimize the apparatus for a specific application. '497 and Miller fail to specify channels for dispersing fluid about the surface. Fawcett et al disclose the concept of providing channels 4 in an evaporation surface and teach that such structures redistribute the film in such a way to break up surface layers of partially evaporated liquid and expose fresh outer surface layers of the film thereby increasing the evaporation efficiency of the surface (see lines 5-15 of col. 2). It would have been obvious to have modified the combination suggested by '497 and Miller so as to have included channels as suggested by Fawcett et al in order to increase the evaporation efficiency of the surface. '497, Miller, and Fawcett et al fail to specify channels that are capillary channels for

dispersing liquid via capillary action. Christensen et al discloses that it is known in the art to provide mass transfer surfaces with capillary channels and teaches that such channels enable horizontal operation of tubular evaporation surface and assists in the formation of a thin layer of liquid on the interior surface to the tube thereby increasing the evaporation efficiency of the apparatus (see from line 62 of col. 3 to line19 of col. 4). It would have been obvious to have modified the combination suggested by '497, Miller, and Fawcett et al so has to have included capillary channels as suggested by Christensen et al in order to enable horizontal operation of a tubular mass transfer surface and to assist in the formation of a thin layer of liquid on the interior surface of the tube in order to further enhance the evaporation efficiency of the apparatus.

Claim 15 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 6,368,497 in view of Lowry, Fawcett et al, Christensen et al, Arntz, and Liaw.

With respect to claim 15, claim 1 of '497 discloses first means for changing the pressure of a fluid from a first pressure to a second pressure, the second pressure being less than the first pressure, and the second means (e.g., the evaporation means). The '497 claims fail to specify, the filter and the space. Lowry discloses a filter 54 for removing solid contaminants from the fluid and surrounding an evaporation chamber 14, and a space 12 between an oil inlet 22 and the filter, and suggests that such an arrangement further improves the quality of the oil by filtering the oil. It would have been obvious to have modified the '497 apparatus so as to have included the filter and space

as suggested by Lowry in order to provide a means of further improving the oil by filtering the oil. '497 and Lowry fail to specify the evaporation chamber including an evaporation surface having channels for dispersing fluid about the surface to facilitate evaporation of contaminants from the fluid. Fawcett et al disclose the concept of providing channels 4 in an evaporation surface and teach that such structures redistribute the film in such a way to break up surface layers of partially evaporated liquid and expose fresh outer surface layers of the film thereby increasing the evaporation efficiency of the surface (see lines 5-15 of col. 2). It would have been obvious to have modified the combination suggested by '497 and Lowry so as to have included channels as suggested by Fawcett et al in order to increase the evaporation efficiency of the surface. '497, Lowry and Fawcett et al fail to specify channels that are spiral capillary channels for dispersing liquid via capillary action. Christensen et al discloses that it is known in the art to provide mass transfer surfaces with spiral capillary channels and teaches that such channels enable horizontal operation of tubular evaporation surface and assists in the formation of a thin layer of liquid on the interior surface to the tube thereby increasing the evaporation efficiency of the apparatus (see from line 62 of col. 3 to line 35 of col. 4). It would have been obvious to have modified the combination suggested by '497, Lowry and Fawcett et al so has to have included spiral capillary channels as suggested by Christensen et al in order to enable horizontal operation of a tubular mass transfer surface and to assist in the formation of a thin layer of liquid on the interior surface of the tube in order to further enhance the evaporation efficiency of the apparatus. '497, Lowry and Fawcett et al fail to specify cavitation jets.

Arntz discloses an analgous apparatus jets 60 capable of causing cavititation since they are funnel shaped and suggests that such an arrangement facilitates removal of volitiles from the fluid. It would have been obvious to have modified the combination suggested by Lowry, Fawcett et al and Christensen et al so as to have included jets as suggested by Arntz in order to facilitate removal of volitiles from the fluid. '497, Lowry, Fawcett et al, Christensen et al, and Arntz fail to specify an electromagnetic coil. Liaw discloses an oil filter including an electromagnetic coil 20 disposed about an analogous chamber (see FIG. 3), the coil capable of functioning to heat the chamber and teaches that such an arrangement enables fine ferromagnetic particles to be removed from the fluid. It would have been obvious to have modified the combination suggested by '497, Lowry, Fawcett et al, Christensen et al, and Arntz so as to have included the electromagnetic coil as suggested by Liaw in order to enable the removal of fine ferromagnetic particles from the fluid.

Claim 22 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,368,497.

With respect to claim 22, Claim 1 of the patent includes first means for removing solid matter from the fluid (e.g., the "pressure means" and "centrifuge means"), and second means for facilitating vaporizing certain liquids in the fluid by squirting the fluid in an evaporation chamber to increase the exposed surface area of the fluid in the evaporation chamber (e.g., the holes of the "evaporation means").

The declaration filed on 2-17-04 under 37 CFR 1.131 is ineffective to overcome the Lowry reference since it fails to include evidence showing an actual reduction to practice of the invention prior to the filing date of the Lowry reference or diligence between the date of conception of the invention, which appears to be February 1995, and the date of actual or constructive reduction to practice (see M.P.E.P. 715.07, part III).

The rejection under 35 U.S.C. 112, first and second paragraph, concerning the structures associated with the recited means has been withdrawn in view of applicant's amendment to page 27 of the specification.

The rejection under 35 U.S.C. 112, second paragraph of claim 1 has been maintained since it remains as to whether or not the apparatus is functionally capable of treating only oil, or capable of treating the broader range implied by the term fluids. It is suggested that the term "oil" on line 6 be changed to –fluid--.

The rejection under 35 U.S.C. 112, first paragraph concerning the structure of the electromagnet has been maintained since it remains unclear as to how an electrical coil could function alone as an electromagnet since no structure for sufficiently concentrating the lines of magnetic flux for attracting magnetic particles has been disclosed in the specification.

Applicant's arguments filed 6-15-05 have been fully considered but they are not persuasive.

With respect to applicant's arguments against the withdrawal of claims 3, 5, 6, and 16-20, the claims remain withdrawn for the following reasons:

Claim 3 recites "parallel or cylindrical walls" and therefore cannot read upon the elected species shown in FIG.10;

Claim 5 recites polygon shaped perforations disclosed to be located outside the channels not shown FIGS. 10;

Claim 6 recites "lacks a built-in heater" not shown in FIGS. 3 or 10;

Claim 16 recites a "base plate" which corresponds to FIGS. 4 or 5 as opposed to FIG. 3;

Claims 17, 18, and 20 depend from claim 16 and are withdrawn for the same reasons as claim 16;

Claim 19 recites "a concentric space formed by an output surface of said filter" and reads on FIG. 6 as opposed to FIG. 3.

Applicant argues that the rejections under 35 U.S.C. 102 and 103 should be withdrawn in view of the declaration under 37 CFR 1.131, however, the declaration is ineffective to overcome the Lowry reference for the reasons set forth above.

Applicant's arguments against 35 U.S.C. rejections incorporating Lowry.

Applicant argues that Lowry fails to disclose a "means for squirting" as recited in claim 8, however, it is held that Lowry discloses the recited means since applicant has defined the means as corresponding to a hole (see the fourth paragraph of the amendment to page 27 of the specification) of which is clearly disclosed by Lowry (see element 58 shown in FIG. 4).

Response to applicant's arguments against the 35 U.S.C. rejections incorporating Fawcett et al and Christensen et al.

Applicant's argument that Fawcett et al fail to teach capillary channels is noted, however, the concept of employing capillary channels is clearly taught by Christensen et al.

Applicant argues that Fawcett et al and Christensen et al constitute non-analogous art with respect to Lowry, however, it is held that the references are analogous since they all include evaporation surfaces for use in mass transfer devices.

Applicant argues that the rejection of claims 10 and 15 is improper over Arntz since Arntz fails to disclose jets capable of causing cavitation as recited in claims 10 and 15, however, it is held that the jet structure of Arntz is capable of performing such a function at high flow rates since it includes holes 60 having funnel portions that are identical to those disclosed by applicant.

Response to applicant's arguments against the 35 U.S.C. 103 rejections incorporating Liaw.

Applicant argues that Liaw fails to include an electromagnetic coil that is capable of functioning as a heater, however, it is held that such function is inherent in any electromagnetic coil since any coil will produce a measurable amount of heat when subjected to a continuous flow of current.

Applicant argument that Liaw fails to include an evaporation chamber is noted, however, such a limitation is clearly disclosed by Lowry.

Applicant's argus that Liaw fails to disclose employing a magnet in the same position as applicant, however, such a magnet position is clearly suggested in FIG. 3 of the reference.

Response to applicant's arguments against the 35 U.S.C. 103 rejections incorporating Miller.

Applicant argues that incorporation of the corrugated structure disclosed by Miller constitutes hind sight, however, it is held that one skilled in the art would incorporate such a feature in order to increase the evaporation surface over that of a flat surface since Miller teaches evaporating volatile contaminants from lubricating oil. Applicant's argument that Miller fails to disclose through holes or capillary channels is noted, however, such features are collectively disclosed by Lowry, Fawcett et al, and Christensen et al.

Response to applicant's arguments against the double patenting rejections incorporating U.S. Patent 6,368,497.

It is assumed that applicant is referring to U.S. Patent 6,368,497 as opposed to U.S. Patent 3,638,497 in his arguments against the obvious double patenting rejections.

Applicant argues that the '497 patent cannot be used in an obvious double patent against the instant claims since the instant application claims priority from the patent and because a restriction requirement was made during prosecution of the prior patent, however, such an argument fails to apply in the instant application since the instant claims include subject matter not disclosed in the prior patent.

Applicant's argument that '497 fails to disclose capillary channels is noted, however, such a feature is clearly disclosed by Fawcett et al.

Applicant argues Fawcett et al and Christensen et al should not be combined with the '497 reference since the references fail to disclose the treatment of oil, however, it is suggested that all of the references are combinable since they include evaporation surfaces for mass transfer. It is further noted that Fawcett et al disclose the treatment of oil (see line 53 of the second column of page 2).

Applicant argues that Liaw should not be combined with the '497 patent, however, it is held that such a combination is proper since both references disclose oil filters including pervious center tubes.

Applicant argues that the rejection of claim 15 should be withdrawn in view of use of a large number of references, however, it is held that the rejection is proper since the

references are analogous to one another and because there are clear suggestions to combine them.

Applicant's acquiescence to the obvious double patenting rejection of claim 21 is noted. Applicant should note that any terminal disclaimer filed will apply to all of the claims as opposed to only claim 21 as argued.

Applicant's amendment to the specification necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew O Savage whose telephone number is (571) 272-1146. The examiner can normally be reached on Monday-Friday, 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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